

Pennsylvania Department of Transportation Bureau of Planning and Research Traffic Editing Program (TEP) for Volume and Class Data

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Abstract

Beginning in late 1994, Pennsylvania began design and implementation of a mainframe-based automated volume editing process. A review of traffic systems was conducted in 2000. In this review, it was decided to implement this process in a PC-based application. In August 2000, the Bureau of Planning and Research partnered with a consulting firm to develop PC-based traffic volume and class editing system. Initial requirements called for the system to incorporate the existing system's methodology and use ideas from other sources. An in-house team was formed to set specific parameters, guide project development, and expand upon the limitations of the existing system.

The resulting system, called the Traffic Editing Program (TEP), imports data in FHWA-standard record formats. It provides flexible automatic edits based on comparisons with historical counts and averages. The user may review and edit counts in tabular and graphical form, and can edit class data at various levels of aggregation. TEP produces a variety of reports in Hypertext Markup Language (HTML) format. It exports edited data in FHWA standard record formats. TEP was written in Visual Basic, and stores data in Microsoft Access databases.

The success of TEP was far beyond the original expectations of the project. It generated the interest that resulted in a follow-on project, whose goal is to develop a comprehensive "Traffic Information System". This system will include functions for field operations management, daily assessment of downloaded counts, analysis of short-term counts and ad hoc reports.

Introduction

The Pennsylvania Department of Transportation maintains sixty-three Automatic Traffic Recorders (ATR) and eleven Continuous Automatic Classification Recorders (CAVC) sites throughout the state. Monthly verification and editing of the volume data has been a labor-intensive task for many years. Continuous classification data has had virtually no data verification or editing process.

In 1994 we mounted an in-house effort to redesign the existing continuous volume editing process with the goal of automating, authenticating, and most importantly, bolstering confidence in the ATR data. The result was a new mainframe-based automated volume editing process that accomplished all the goals set forth. Although this was a major step forward, there was still much room for improvement. Due to limited resources, an automated process to evaluate and edit classification data could not be developed at that time.

In August 2000, the Department contracted Ajilon Consulting to port the existing automated volume editing process from the mainframe to the personal computer. Enhancements would include a graphical user interface and further automation of portions of the existing process. We also decided at this time to develop a classification editing process.

The program that implements new continuous volume and classification editing process is called TEP–Traffic Editing Program. It was written in Microsoft Visual Basic and includes functions for count import, automatic review, editing and reporting. The following sections explain TEP’s structure and usage.

TEP Workflow

This diagram and the text below describe the process of editing a month's counts using TEP:

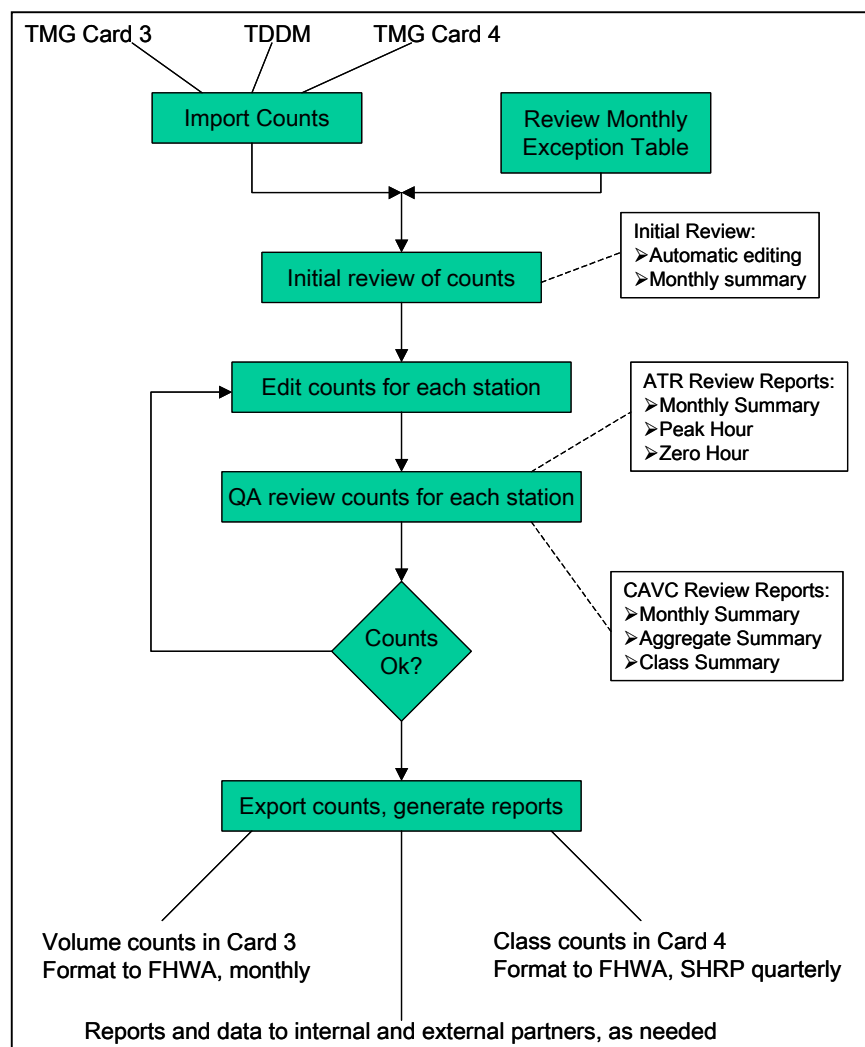


Figure 1: TEP Workflow

TEP's Main Window

From TEP's main window, you can select the month whose data you want to edit, identify the analyst currently using the system, and access all of TEP's editing functions through the toolbar or menus.

Parts of this window

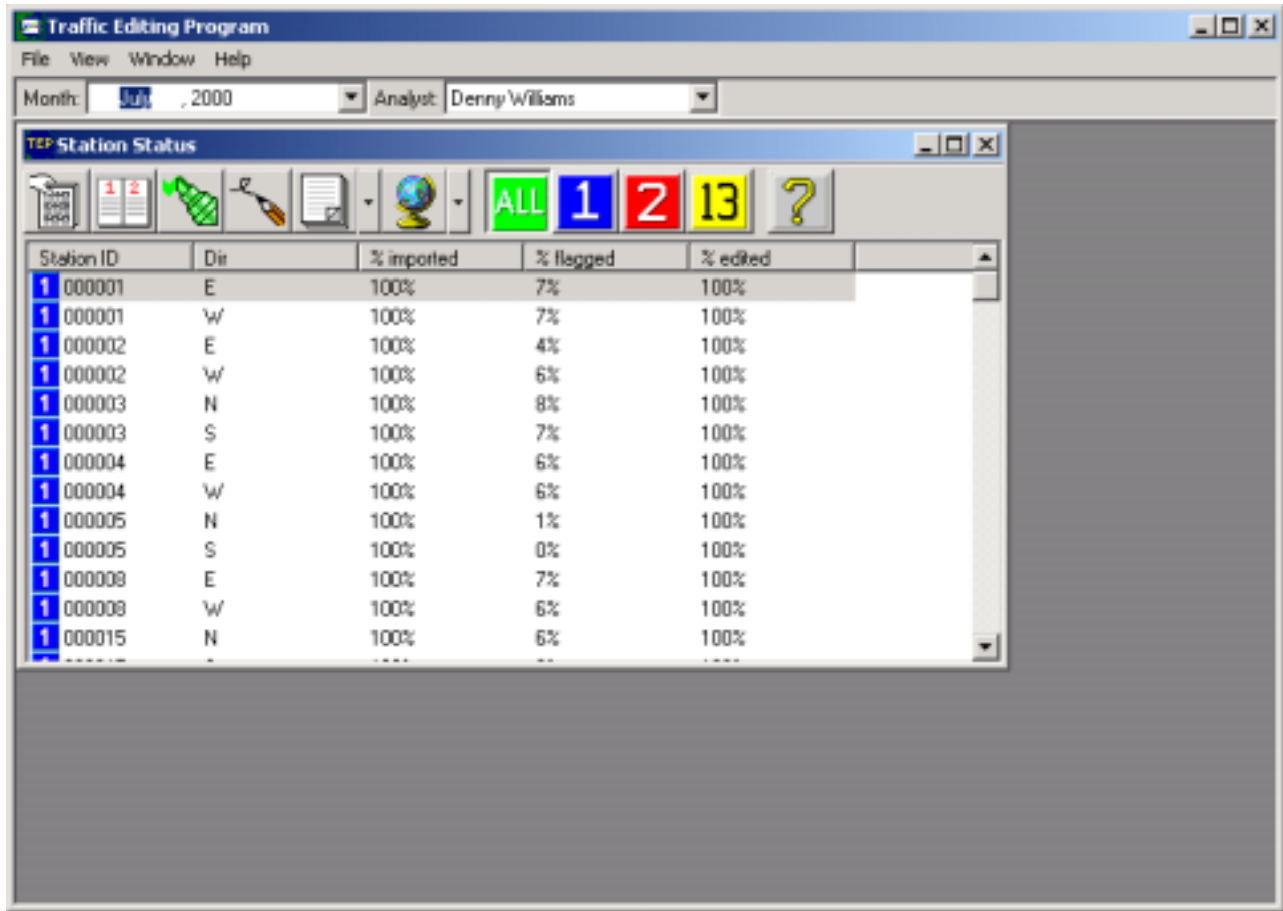
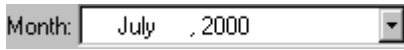











Figure 2: TEP Main Window

- **Menus**
 - **File**
 - **Open Monthly Exception Table** Opens the Monthly Exception Table for the current month.
 - **Automatically Edit Selected Stations...** Opens the Automatic Editor to apply automatic editing conditions to the stations you have selected from the Station Status list.
 - **Import Counts** Opens the Count Importer to read new raw counts into TEP's database.
 - **Export** Opens the Count Exporter to export edited counts into a standard format file of one of these two types:
 - Card 3 File
 - Card 4 File

- **Exit** Exits TEP.
- **View** The View menu lets you select the type of stations you want to see in the Station Status list, and gives you three ways to change the current month.
 - **All Stations** Sets the Station Status list to display all stations regardless of type.
 - **ATR Stations** Sets the Station Status list to display only ATR stations
 - **Two-class Stations** Sets the Station Status list to display only stations that produce passenger vehicle and truck traffic counts
 - **CAVC Stations** Sets the Station Status list to display only stations that produce FHWA 13-class traffic counts
 - **Previous month** Select this option to view data for the month previous to the currently selected month
 - **Go to month...** If you select this option, TEP will ask you to type the month you wish to view.
 - **Next month** Select this option to view data for the month following the currently selected month
- **Window**
 - **Tile Horizontally** Use this to arrange all of the windows within the Main window horizontally
 - **Tile Vertically** Use this to arrange all of the windows within the Main window vertically
 - **Cascade** Use this to arrange all of the windows within the Main window in a cascading pattern

The Window menu also contains a list of all windows active within the main window. You can select a new window within the main window using this list.

- **Help**
 - **Contents...** Use this to display the Table of Contents for TEP's online help.
 - **Index...** Use this to display the Index for TEP's online help.
 - **Search...** Use this to search TEP's online help for a keyword.
 - **About...** Use this to display a window with version and other information on TEP.
- **Toolbar Buttons and Other Parts of the Window**
 - This control:  lets you select the month you wish to view. Click the button on the right and a calendar will appear. Use the left and right buttons on the calendar to select the new month.
 - This control:  lets you identify yourself as the analyst currently using TEP. (This is important because some editing activities are logged by the system, and also because some analysts are recorded as having read-only access to the data.) Click the button on the right, and select your name from the list that appears.
 - The toolbar on the "Station Status" window provides shortcuts to most of TEP's features:

-  This button activates the Count Importer
-  This button opens the Monthly Exception Table
-  This button opens the Automatic Editor to apply conditions to the stations you have selected for the current month
-  This button opens the counts for the station you have selected for editing
-  This button provides a list of the reports TEP can generate. If you click the arrow, a menu of reports will appear. If you press the button, TEP will generate a Monthly Summary Report. Many of the reports require you to select the stations you wish the report to include.
-  This button provides a list of the export options in TEP: Card 3 File and Card 4 File. TEP will export counts for the stations you select.
-  These buttons "filter" the list of stations displayed similarly to the View menu options mentioned above
-  This button displays the Table of Contents for TEP's online help.
- Finally, the station status list displays a list of the types, id numbers and directions of all stations stored in TEP's database, along with three status values:
 - *Percent imported* This is the number of hours of data for the current month that have been imported into TEP's database, as a percentage of the total number of hours in the month.
 - *Percent flagged* This is the number of hours of raw data for the current month which have been flagged by TEP's Automatic Editor, again as a percentage of the total number of hours in the month.
 - *Percent edited* This is the number of hours in the current month for which a value has been accepted as the edited value for the station, again as a percentage of the total number of hours in the month.

Importing Counts

The Count Importer

The Count Importer is available from the main TEP screen. It allows you to select files in Card 3 or Card 4 format to import as raw counts.

Parts of this window

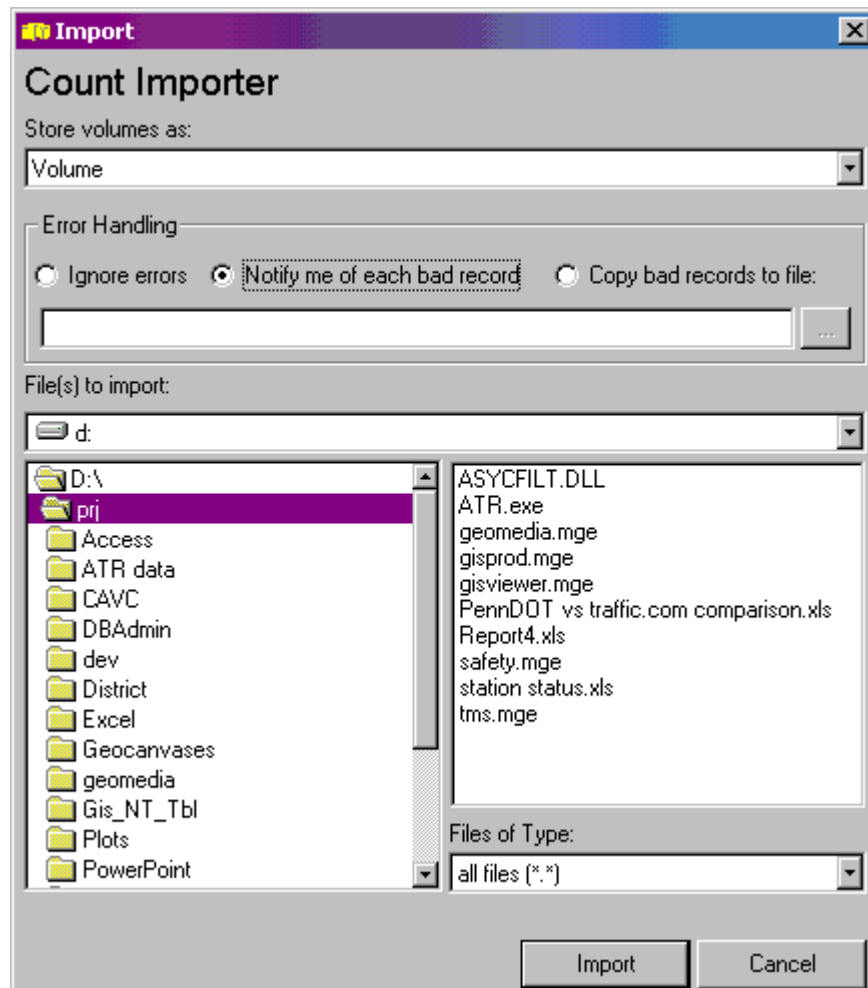



Figure 3: TEP Count Importer

- **Store volumes as:** For stations that produce either passenger vehicle and truck totals only, or volume and truck totals only, you may import values from a Card 3 file into one of these three classes.
- **Error Handling:** TEP checks for errors as it reads a Card 3 or Card 4 file. Use these options to tell TEP what to do when it encounters an error. If you click "Ignore errors," TEP will not process any line from an import file with errors. If you click "Notify me of each bad record," TEP will display the contents of any record it finds with errors. If you click "Copy bad records to file:" TEP will save a copy of any records it finds with errors in a separate file, which you can then repair and import, just as you would any other Card 3 file. Use this button:  to select a folder and filename for the error file.
- **File(s) to import:** You can select several files for TEP to import using the Shift and Control keys. TEP will automatically check the format of the files you tell it to import.
- **Files of Type:** Use this list to display only files whose names have certain extensions.
- **Import** When you have selected the files you want TEP to import, click this button. TEP will display status messages as it imports each file.
- **Cancel/Close** Use this button to close this window.

How TEP Checks Imported Data

When you import raw data from a Card 3 or Card 4 file, TEP checks the Station ID and direction fields to make sure that the station and direction are among those recorded in its database. It also checks the total length of each input record to make sure that it is correct for the type of import file. It is recommended that when importing data, you check the option "Copy bad records to file" on the Count Importer window, and specify a file for TEP to store bad records. This way, you can edit the bad record file, and once it is fixed, re-import it as a valid Card 3 or Card 4 file.

The Monthly Exception Table

Exception Table Window

Use this window to establish comparison days for the current month. When you open the Exception Table for the first time, TEP selects a "first draft" set of comparison days for the month, based on the day of the week and its list of major holidays. You can change TEP's automatic selection in this window.

Parts of this window



	DOW	2000 date	Note	1999 date	DOW
▶	Sat	Jul 01		Jul 03	Sat
	Sun	Jul 02		Jul 03	Sat
	Mon	Jul 03		Jul 05	Mon
	Tue	Jul 04	Independence Day	Jul 04	Sun
	Wed	Jul 05		Jul 06	Tue
	Thu	Jul 06		Jul 08	Thu
	Fri	Jul 07		Jul 09	Fri
	Sat	Jul 08		Jul 10	Sat
	Sun	Jul 09		Jul 11	Sun
	Mon	Jul 10		Jul 12	Mon
	Tue	Jul 11		Jul 13	Tue
	Wed	Jul 12		Jul 14	Wed
	Thu	Jul 13		Jul 15	Thu
	Fri	Jul 14		Jul 16	Fri
	Sat	Jul 15		Jul 17	Sat
	Sun	Jul 16		Jul 18	Sun
	Mon	Jul 17		Jul 19	Mon
	Tue	Jul 18		Jul 20	Tue
	Wed	Jul 19		Jul 21	Wed
	Thu	Jul 20		Jul 22	Thu
	Fri	Jul 21		Jul 23	Fri
	Sat	Jul 22		Jul 24	Sat

Figure 4: Monthly Exception Table

- **Menus**

- **File**

- **Close** This option will close the Exception Table window.
 - **Exit** This option will exit TEP.

- **Window**

- **Tile Horizontally** Use this to arrange all of the windows within the Main window horizontally
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 - **Search...** Use this to search TEP's online help for a keyword.
 - **About...** Use this to display a window with version and other information on TEP.

- **Exception Table Grid**

- **DOW** This column displays the day of week of each of the days in the current month
 - **2000 date** This column lists the dates in the current month
 - **Note** This column lists names of holidays that TEP has identified in the current month, as well as notes that you or other users enter. Click on a box in this column and type in text to enter a note. These notes and holiday names also appear on the Exception Table portion of the Editing Window.
 - **1999 date** This column lists the comparison day for each day in the current month. To change the comparison day, click on a box in this column. A calendar will appear. Select the new date using the calendar's dates, and its left- and right buttons.
 - **DOW** This column displays the day of the week of the comparison day for each day in the current month. For non-major-holiday dates where no changes have been made, the current date and the comparison date should fall on the same day of the week.

About the Monthly Exception Table

The Traffic Editing Program helps you analyze raw traffic counts in part by comparing this year's values to last year's. However, traffic patterns are influenced by day of week as well as holidays. To make a valid comparison, the program has to compare the counts for each day of the current year with the counts for an appropriate day in the previous year. To do this, the program stores a table that lists days along with their **comparison days**, or days in the previous year that occur at around

the same time, with the same day of week. For certain holidays, the program automatically selects the same holiday in the previous year for a comparison day. These holidays include:

- New Year's Day
- President's Day
- Good Friday
- Easter Saturday
- Easter
- Easter Monday
- Memorial Day
- Independence Day
- Labor Day
- Thanksgiving
- Thanksgiving Friday
- Christmas Eve
- Christmas
- New Year's Eve

TEP also notes the occurrence of several other "non-major" holidays, but does not adjust their comparison days. Since the program may not always choose the correct comparison day, it allows you to view and edit the exception table for the current month, called the **monthly exception table**.

Automatic Editing

The Automatic Editing Window

From this window, you can apply automatic editing conditions to raw counts, and add or edit conditions.

Parts of this window

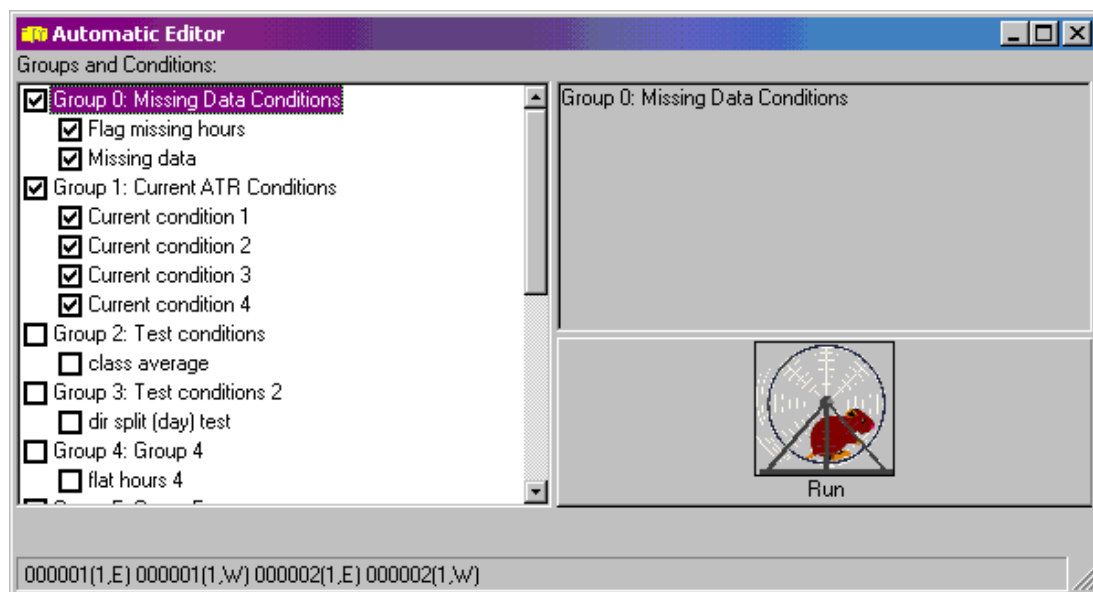


Figure 5: Automatic Editor

- **Menus**
 - **File**
 - **New condition...** Use this option to create a new automatic editing condition. TEP will next prompt you to enter the condition type and scope on this window.
 - **Close** This option will close the Automatic Editing window.
 - **Exit** This option will exit TEP.
 - **Edit**
 - **Edit condition group name...** TEP displays this option when you have a condition group selected in the condition list. Use this option to change the name of the selected condition group.
 - **Edit condition...** TEP displays this option when you have a condition selected in the condition list. Use this option to edit the selected condition.
 - **Delete condition:** TEP displays this option when you have a condition selected in the condition list. Use this option to delete the selected condition. **WARNING:** This will delete the selected condition permanently from the TEP database!
 - **Run** This menu has only one option, "Run automatic editor," which tells TEP to begin the automatic editing process for the selected stations using conditions in the selected groups.
 - **Window**
 - **Tile Horizontally** Use this to arrange all of the windows within the Main window horizontally
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 - **Search...** Use this to search TEP's online help for a keyword.
 - **About...** Use this to display a window with version and other information on TEP.
- **Groups and Conditions** This list displays the names of all of the conditions in the TEP database, organized into 16 condition groups. Click the boxes to the left of the names to select or deselect groups for automatic editing. When you click on the name of a condition, TEP will display a description in the display window on the right-hand side of the window.
- **Status Display** The box in the upper right-hand corner of the window displays a description of the selected condition or condition group when the Automatic Editor is not running. When the editor is running, this box displays messages indicating the status of the process

- **Run Button** Click this button (or the "Run automatic editor" menu) to start the automatic editor.
- **Status Bar** The bar at the bottom of the window displays a list of the station IDs, types (1 for ATR, 2 for 2-class, 13 for CAVC) and directions of the stations selected for automatic editing.

Automatic Editing Using TEP

The name "Automatic Editing" actually refers to TEP's ability to check raw counts for possible errors using a set of user-defined **conditions**. TEP supports 19 different types of conditions, which can be applied subject to five different types of restrictions.

Condition Groups

The automatic editing conditions you enter into TEP are stored in 16 different condition groups. You can change the names of these groups and move conditions from one group to another. However, when you run the Automatic Editor against a set of raw counts, TEP will mark any hour (or day) that doesn't "pass" a condition's test with the number of that condition's group. This is what you see in the "Flags" column of the count grid on the Editing Window. By grouping the conditions together carefully and using restrictions, you can identify the specific problem with a count from these flags. For instance, if condition group 5 flags an hour, and condition group 5 contains only conditions that identify missing data (zero period or missing data conditions), you can conclude that the data for that hour was probably missing. If, on the other hand, condition group 5 happens to contain conditions that compare the current raw value to the weighted comparison value, then it may be more likely that unusual conditions at the station caused a change in the count.

Trial and Error

Since the Automatic Editor allows comparisons to factor table averages and comparison table values, it can take quite a while to run for a large number of stations. For this reason, it is best to test new conditions with a few stations at a time.

Editing Counts

The Editing Window

Once you have imported data for a station and used the Automatic Editor to identify potential problems, use TEP's editing window to select edited values for the station. The editing window offers two views of the data: the Comparison Table view, which displays the data with comparison values obtained via the Exception Table, and the Factor Table view, which displays the data along with average values for the hour, month and day of week.

Parts of this window

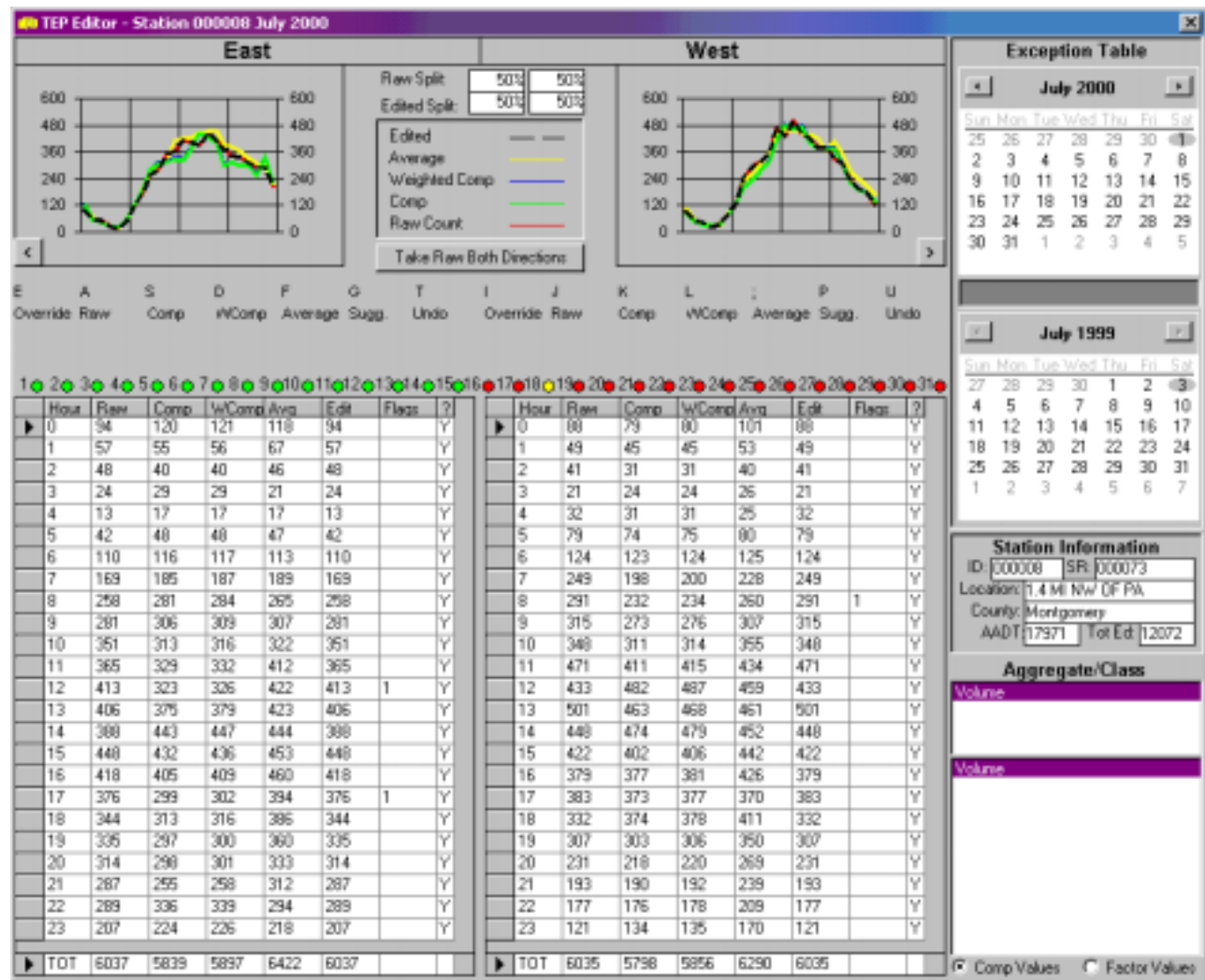


Figure 6: Comparison Table View

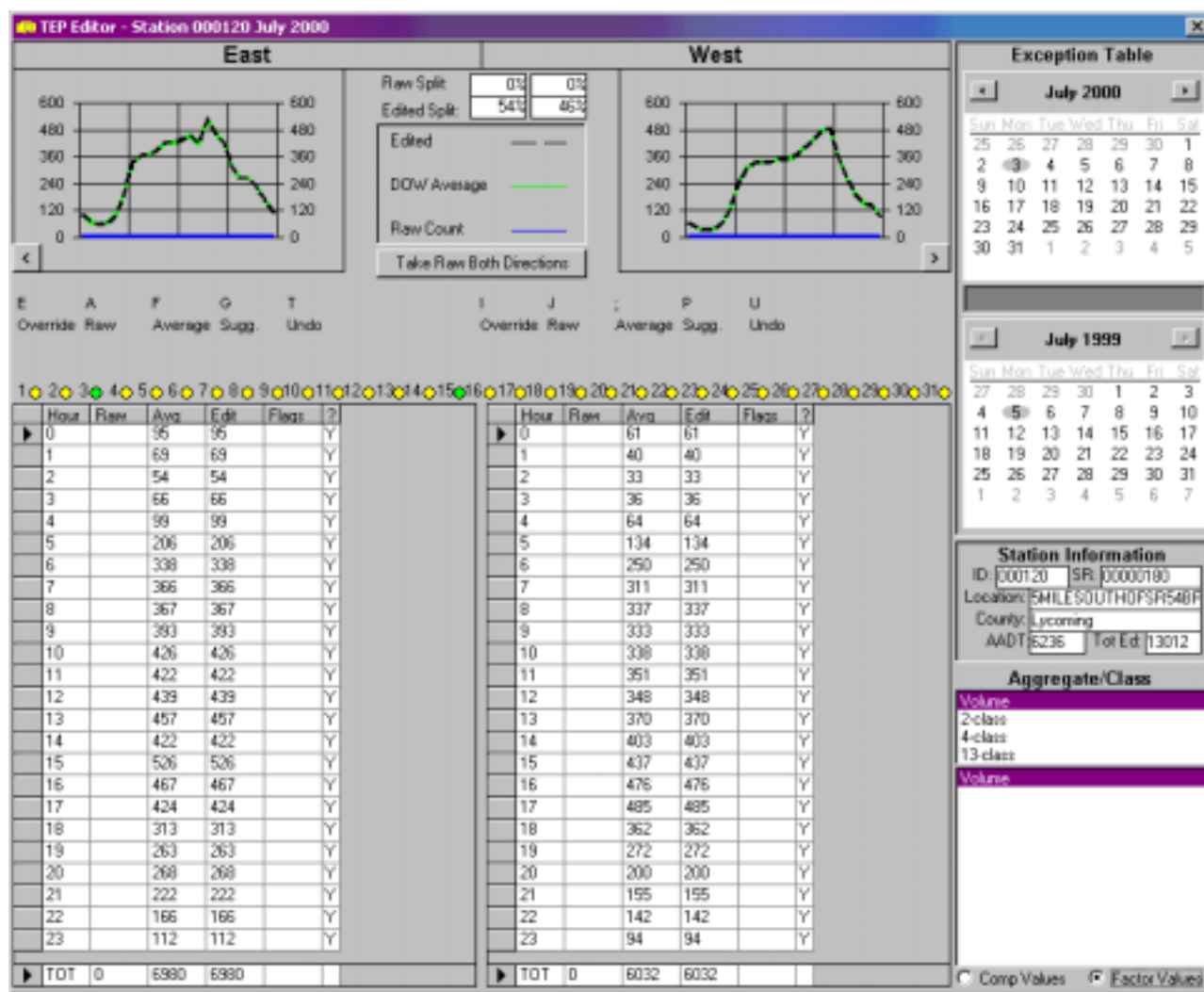


Figure 7: Factor Table View

- **View Options.** Use the option buttons "Comp Values" and "Factor Values" to select the view you need.
- **Graphs.** The top portion of the window displays the current day's counts in two graphs. The legend in the center of the window lets you know what the different colors represent. The split between the raw and edited totals in both directions is also displayed between the graphs.
- **Menus.** Hold the mouse over one of the words in the area directly below the graphs. This is where you select the values to accept for the day. You have the following options (for each direction):
 - *Override* Select this option and TEP will ask you to type in a value. It will use this value as the edited count for the current hour. NOTE: This option only works for individual hours, and does not work for aggregate classes.
 - *Raw* In both views, this option will accept the raw value(s) as the edited count(s). The button labeled "Take Raw Both Directions" will accept raw counts for both directions for the entire day.

- *Comp* (Comp Values view only) This option will accept as the edited count(s) the edited value(s) from the current day's comparison day, which was set in the Exception Table.
- *WComp* (Comp Values view only) This option will accept as the edited count(s) the edited value(s) from the current day's comparison day, with a station-specific growth factor applied.
- *Average* In the Comp Values view, this option will accept as the edited count(s) a historical average of counts from a series of days, including the current day's comparison day, the comparison day's comparison day, etc. as far back as there is data to compare. This average includes the station-specific growth factor, applied for each year's data.

In the Factor Values view, this option will accept as the edited count(s) an average of counts with the same month and day-of-week as the current day. TEP calculates this average using edited data if enough edited data is present in its database; otherwise, TEP will use raw data.

- *Sugg* In the Comp Values view, this option will accept as the edited count(s) either the Raw count, if there are no Automatic Editing flags for the hour, or the Weighted Comparison count, if there are flags.

In the Factor Values view, this option will accept as the edited count(s) the Raw count or the Factor Table Average, according to whether there are Automatic Editing flags for the hour.

Note: When no count has been selected for an hour, TEP uses these rules to place a suggested value in the "Edit" column of the count grid.

- *Undo* In both views, this option will undo whatever selection has been made for the edited count(s).

You can use each of these options (except Override) to edit data for the hours you have selected on the count grids ("Current") or to edit the entire day's data at once ("All").

- **Status Display.** TEP uses the row of dots directly above the count grids to display the editing status of each day of the month for the station. A red dot ● next to a date indicates that the counts for that date have not been edited, and that there are automatic flags on that day. A yellow dot ● indicates that the counts for a date have not been edited, but that there are no flags. A green dot ● indicates that the counts have been edited for a date.
- **Exception Table.** The two calendars in the upper right-hand portion of the window display the current date and the comparison day that was set in the Exception Table. You can view a different day's data by clicking the date in the upper calendar (only days in the current month are available).

The box between the calendars displays the name of any holidays that occur on the current date, or any note that has been recorded for the current date in the Exception Table. You can also change dates using these buttons: < and >, which are on the two graphs at the top of the screen.

- **Station Information.** TEP displays some information about the current station directly below the Exception Table display. The "Tot Ed" value is the total of the edited volume counts for both directions for the current day.
- **Aggregate & Class Selection** If you are editing counts for a CAVC or two-class station, use the two lists at the bottom right-hand corner of the window to select an aggregate level and class to view. The Aggregates list displays all aggregate levels that are available for the current station. When you select a level, the Class list displays the classes available within that aggregate level.

"Comp View": Comparisons Using the Exception Table

TEP uses the Exception Table to calculate three different values for comparison when editing:

1. *Comparison Values (Comp)* The comparison value for an hourly count is the count for the same hour of the day on the comparison day for the count's date.
2. *Weighted Comparison Values (WComp)* TEP records a growth factor for each station in its database. The weighted comparison value for an hourly count is the comparison value for the count, with this growth factor applied.
3. *Exception Table Average (Avg in the Comp Values view)* This is a historical average, calculated by keeping a running sum of comparison values, all with the station-specific growth factor applied. **This average is only calculated for the Volume aggregate level. Exception Table averages displayed at other aggregate levels are actually Volume averages.**

Example: Exception Table Average

Suppose that TEP records counts for a station with a growth factor of 2% (1.02) going back to 1997. Consider a count for one hour on June 16, 2000. Here are the values that are used to calculate the exception table average for this count:

Date	Edited Value	Running Total	Count
6/16/2000	N/A	$1.02 * (205 + 412.12) = 629.46$	3
6/18/1999	205	$1.02 * (198 + 206.04) = 412.12$	2
6/19/1998	198	$1.02 * 202 = 206.04$	1
6/20/1997	202	N/A	N/A

Since we multiplied the growth factor by the running total plus the edited count for every year, the growth factor has been applied 3 times to the 1997 value, 2 times to the 1998 value, and once to the 1999 value to get a running total in 2000 of 629.46, covering 3 years. This gives us an exception table average of $629.46 / 3 = 209.82$.

Changing Historical Values

The comparison values and weighted comparison values for a month's counts are recalculated every time you open the counts for editing. The running total for the current year (and the exception table average) is also calculated when you open the counts; however, the running total for the comparison day (in the previous year) is not recalculated. If you make a change to an edited value more than one year old, you will need to open each of the succeeding year's counts for that month, in order, so that TEP can "roll forward" the change in the running total. For instance, in the

example above, if you changed the 1997 edited value, you would need to open the counts including that hour in 1998, the counts including the date in 1998 in 1999, and finally the counts including the date in 1999 in 2000, to see the affect of the change in the 2000 exception table average.

"Factor View": Comparisons Using the Factor Table

TEP's factor view is designed to provide comparison values for stations and time periods where the comparison count and average calculated using the Exception Table either do not exist (as in the case of a new station) or are insufficient (as in the case where the previous years' data is not complete).

The factor table average for a particular hour and date is calculated, if possible, by averaging all edited values for the same hour on days in the same month of the year, which fall on the same day of the week. "If possible" refers to the possibility that there are not enough edited values (a full week in the correct month) to average. If this is the case, TEP will revert to an average of all available imported raw values for the hour, month and day of week.

In all cases, the values used for the average need not be from dates before the date being edited. For instance, if 1999 data was imported and edited, and then 1998 data was imported, its factor table averages would be based on the 1999 data. It is also important to note that the factor table average does NOT include any growth factors. This should be taken into account when using factor table averages for editing.

Editing Class Counts

Most of the time, when editing counts for stations that produce CAVC (13-class) data, you will view the data at a level of aggregation above the 13-class level, like the 4-class level (passenger vehicles, single-unit trucks, single-trailer trucks and multi-trailer trucks) or the 2-class level (passenger vehicles and trucks).

In the manual editing window, when you accept a value for an hour for an aggregate class, TEP copies the values at the stations **intrinsic** aggregate level into the edited column. The intrinsic aggregate level of the station is the level at which the station actually produces data.

If you view data at an aggregate level and in a class for which all of the data in the intrinsic classes is edited, TEP will display "Y" in the right-hand column of the count grid. If some of the intrinsic classes within the aggregate class are edited, but not all, TEP will display "T" in the grid. If no intrinsic classes within the aggregate class are edited, TEP will display "N".

Example

Suppose the counts for one hour for a CAVC station are as indicated in this table (shown with all the aggregate values, and the letter "N" to indicate no edits have been done):

Aggregate	Classes												
Volume	1 Raw: 309 Edit: 0 N												
Two class	1 Raw: 215 Edit: 0 N			2 Raw: 94 Edit: 0 N									
Four class	1 Raw: 215 Edit: 0 N			2 Raw: 6 Edit: 0 N			3 Raw: 82 Edit: 0 N			4 Raw: 6 Edit: 0 N			
FHWA 13-class	1 Raw: 0 Edit: 0 N	2 Raw: 181 Edit: 0 N	3 Raw: 34 Edit: 0 N	4 Raw: 2 Edit: 0 N	5 Raw: 3 Edit: 0 N	6 Raw: 1 Edit: 0 N	7 Raw: 0 Edit: 0 N	8 Raw: 6 Edit: 0 N	9 Raw: 76 Edit: 0 N	10 Raw: 0 Edit: 0 N	11 Raw: 4 Edit: 0 N	12 Raw: 2 Edit: 0 N	13 Raw: 0 Edit: 0 N

Suppose that you accept raw values for, say, single trailer trucks for a particular hour for a CAVC station. TEP will copy the raw values for classes 8, 9 and 10 at the 13-class level over to the edited column, and will record that classes 8, 9 and 10 have been edited (changed values are highlighted in yellow):

Aggregate	Classes												
Volume	1 Raw: 309 Edit: 82 T												
Two class	1 Raw: 215 Edit: 0 N			2 Raw: 94 Edit: 82 T									
Four class	1 Raw: 215 Edit: 0 N			2 Raw: 6 Edit: 0 N			3 Raw: 82 Edit: 82 Y			4 Raw: 6 Edit: 0 N			
FHWA 13-class	1 Raw: 0 Edit: 0 N	2 Raw: 181 Edit: 0 N	3 Raw: 34 Edit: 0 N	4 Raw: 2 Edit: 0 N	5 Raw: 3 Edit: 0 N	6 Raw: 1 Edit: 0 N	7 Raw: 0 Edit: 0 N	8 Raw: 6 Edit: 6 Y	9 Raw: 76 Edit: 76 Y	10 Raw: 0 Edit: 0 Y	11 Raw: 4 Edit: 0 N	12 Raw: 2 Edit: 0 N	13 Raw: 0 Edit: 0 N

Now, suppose you switch to the 2-class aggregate level in the editing window, and select the class "Trucks." The hour for which you accepted values in classes 8, 9 and 10 will be marked with a "T", for "Tentative." This means that some of the classes within the aggregate class "Trucks" are edited, but some are not.

Next, suppose you switch to the "Passenger vehicles" class in the 2-class aggregate level, and accept raw values. TEP will copy the values for classes 1, 2 and 3 over to the edited column (changed values are highlighted in light blue):

Aggregate	Classes												
Volume	1 Raw: 309 Edit: 297 T												
Two class	1 Raw: 215 Edit: 215 Y			2 Raw: 94 Edit: 82 T									
Four class	1 Raw: 215 Edit: 215 Y			2 Raw: 6 Edit: 0 N				3 Raw: 82 Edit: 82 Y			4 Raw: 6 Edit: 0 N		
FHWA 13-class	1 Raw: 0 Edit: 0 Y	2 Raw: 181 Edit: 181 Y	3 Raw: 34 Edit: 34 Y	4 Raw: 2 Edit: 0 N	5 Raw: 3 Edit: 0 N	6 Raw: 1 Edit: 0 N	7 Raw: 0 Edit: 0 N	8 Raw: 6 Edit: 6 Y	9 Raw: 76 Edit: 76 Y	10 Raw: 0 Edit: 0 Y	11 Raw: 4 Edit: 0 N	12 Raw: 2 Edit: 0 N	13 Raw: 0 Edit: 0 N

Since all classes are not yet edited, TEP still displays a "T" at the volume level.

TEP Reports

The Report Window

After you generate a report using TEP, it is displayed in this window. From this window, you can change the report's options, regenerate it, save it to a new location, or print it.

Parts of this window

TEP Station Status Report					
January 1995					
Station Type	Station ID	Direction	Percent Imported	Percent Flagged	Percent Edited
Volume	000001	E	100%	0%	100%
Volume	000001	W	100%	0%	100%
February 1995					
Station Type	Station ID	Direction	Percent Imported	Percent Flagged	Percent Edited
Volume	000001	E	100%	0%	100%
Volume	000001	W	100%	0%	100%
March 1995					

Figure 8: TEP Report Window

- **Menus**

- **File**

- **Save As...** If you select this option, TEP will prompt you for a filename, and will save a copy of your report to that file.
 - **Regenerate report** This will regenerate the report, using the data currently in the database. You may want to use this option for reports that you generate frequently during editing.
 - **Print...** This will display a print options window. From this window, you can select a printer and some other options, and print your report.
 - **Close** This option will close the report window.
 - **Exit** This option will exit TEP.

- **Window**




- **Tile Horizontally** Use this to arrange all of the windows within the Main window horizontally
 - **Tile Vertically** Use this to arrange all of the windows within the Main window vertically
 - **Cascade** Use this to arrange all of the windows within the Main window in a cascading pattern

The Window menu also contains a list of all windows active within the main window. You can select a new window within the main window using this list.

- **Help**

- **Contents...** Use this to display the Table of Contents for TEP's online help.
 - **Index...** Use this to display the Index for TEP's online help.
 - **Search...** Use this to search TEP's online help for a keyword.
 - **About...** Use this to display a window with version and other information on TEP.

- **Toolbar**

-  If you click this button, TEP will regenerate the report with its current options.
 -  If you click this button, TEP will display a Print Options window, and allow you to print the report.
 -  If you click this button, TEP will display the report's options. If you change options, TEP will regenerate the report.

Reports

TEP generates a variety of reports from its database. Here is a partial list:

- *Monthly Summary Report.* Includes daily totals for any class for the selected station(s) and month, day-of-week totals, and averages.
- *Peak Hour Report.* Lists the hours in the current month with the largest counts in any class for each of the selected stations.
- *Peak Hour Report (by day-of-week)* Peak hours for any class for the selected stations, grouped by day-of-week.

- *Zero Hour Report.* Lists all hours in the current month where selected stations have zero counts in any class, within a range of hours you specify.
- *Percent Edited Report.* Lists the percent of the month's hourly counts whose edited value is different from raw for the selected stations.
- *Seasonal Variation Report.* Determines seasonal variation factors for any class for all selected stations, covering a year's time.
- *Monthly Exception Table Report.* Displays the comparison days for the current month, and any holidays.
- *Station Status Report.* Displays percent imported, flagged, and edited for the selected stations for all available months.
- *Station Summary Report.* Displays the monthly volume total for the selected stations for all months that have been completely edited.

When you generate a report from TEP, it is saved in Hypertext Markup Language (HTML) format. It can then be viewed in a Web browser, printed, or imported into a variety of office applications.

Exporting Counts

Although the figure below displays a "Card 3 Export" window, the procedure for exporting Card 3 or Card 4 files is the same. Use this window to set TEP's export options and to export edited counts from TEP's database.

Parts of this window

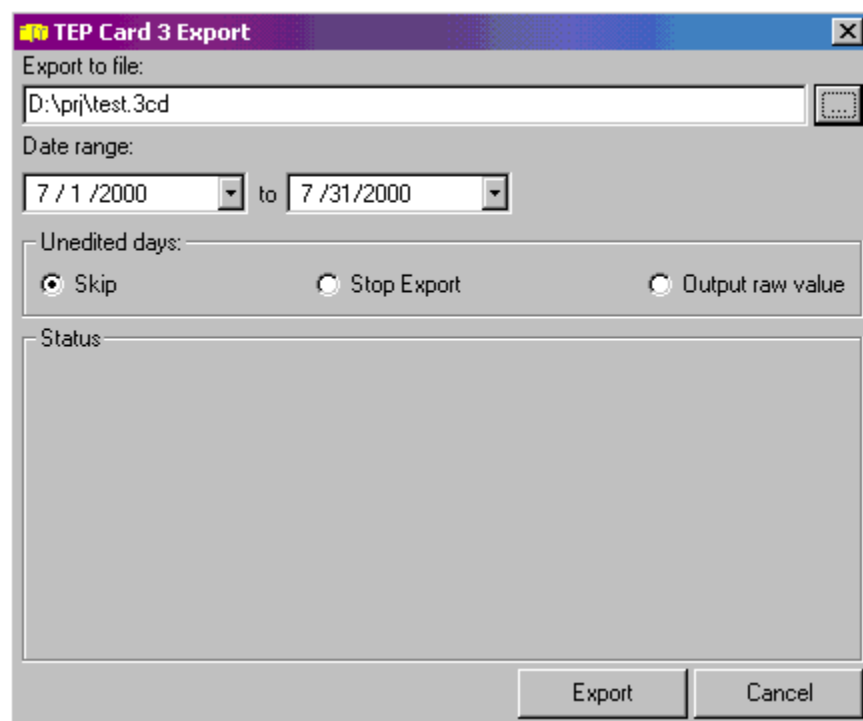



Figure 9: TEP Count Export Window

- **Export to file** You may type the name of the file to export in the box, or click this button:  and TEP will display a "Save As" window so that you can select a folder and filename.

- **Date range** Set the beginning and end dates for the counts to be exported here. Click the down arrow next to the date: and a calendar will appear. Use the left- and right-buttons to change months, and select a date by clicking on it.
- **Unedited days** You can specify one of three things for TEP to do if it encounters a day without edited data during export:
 - *Skip* If you select this option, TEP will simply not export data for any day (Card 3) or hour (Card 4) in which there is no edited value.
 - *Stop Export* If you select this option, TEP will cancel the export if it encounters a day with unedited data.
 - *Output Raw Value* If you select this option, TEP will substitute the raw value for any hour with no edited value.
- **Status** As it exports data, TEP displays the status of the export here.
- **Export button** When you have specified the options for exporting your data, click this button to begin. When TEP is finished, the word "Done" will appear in the Status box.

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